



## Superfund Program Proposed Plan

U.S. Environmental Protection Agency,  
Region II

### Radiation Technology, Inc. Superfund Site

2011

#### EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the U.S. Environmental Protection Agency's (EPA's) preferred alternative to address a waste/drum disposal area at the Radiation Technology, Inc. (RTI) Superfund Site (Site), located in Morris County, New Jersey. EPA's preferred alternative is Alternative 2, excavation of drum material with off-Site disposal and/or treatment.

This Proposed Plan includes summaries of the cleanup alternatives evaluated for use at the Site. This document is issued by EPA, the lead agency for Site activities.

EPA is issuing this document as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and Section 300.435 (c)(2)(ii) of the National Contingency Plan (NCP). This document summarizes information that can be found in detail in the Administrative Record file for this Site. This Proposed Plan is being provided to inform the public of EPA's preferred remedy, and to solicit public comments pertaining to the preferred alternative. The remedy described in this Proposed Plan is the preferred alternative for the Site. Changes to the preferred alternative, or a change from the preferred alternative to another alternative, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken all public comments into consideration. The State of New Jersey is currently evaluating EPA's Preferred Alternative in this Proposed Plan. The public is encouraged to review and comment on the preferred alternative considered by EPA in this Proposed Plan.

#### COMMUNITY PARTICIPATION

EPA and the New Jersey Department of Environmental Protection (NJDEP) provide information regarding the remediation of the RTI Site to the public through public meetings and the Administrative Record file for the Site. EPA and the State of New Jersey rely on public

#### MARK YOUR CALENDAR

##### PUBLIC COMMENT PERIOD:

**April 13, 2011 – May 13, 2011**

U.S. EPA will accept written comments on the Proposed Plan during the public comment period.

##### PUBLIC MEETING: April 21, 2011

U.S. EPA will hold a public meeting to explain the preferred remedy in the Proposed Plan. Oral and written comments will also be accepted at the meeting. The meeting will be held at the Rockaway Township Municipal Building, located at 65 Mount Hope Road, Rockaway, New Jersey at 7:00pm

##### For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region II  
290 Broadway, 18<sup>th</sup> Floor  
New York, New York 10007-1866  
(212) 637-3261  
Hours: Monday - Friday 9:00 am to 5:00 pm

Rockaway Township Free Public Library  
61 Mount Hope Road  
Rockaway, New Jersey 08341  
(973) 627-2344  
Hours: Monday - Friday 9 am to 9 pm.

input to ensure that the public will have a more comprehensive understanding of the Site and the Superfund activities that have been conducted.

The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. This Proposed Plan and the supporting documents are being made available to the public during the public comment

1000001

period. Written comments on the Proposed Plan will be welcomed through May 13, 2011 and, if received by that date, will be considered by EPA before it issues the Record of Decision (ROD), which will formally document the selected remedy. All written comments should be addressed to:

Mr. Brian Quinn  
Remedial Project Manager  
U.S. Environmental Protection Agency – Region 2  
290 Broadway – 19<sup>th</sup> Floor  
New York, N.Y. 10007-1866

The selected remedy will be documented in the ROD only after consideration of all comments received. A public meeting has been scheduled for April 21, 2011 at 7:00 pm at the Rockaway Township Municipal Building.

## **SITE HISTORY**

### Background/Site Characteristics

The Site is located in a predominantly rural area in the western portion of Morris County, New Jersey, at 108 Lake Denmark Road in the Township of Rockaway. It is situated approximately five miles north of Exit 37 of Interstate 80.

The entire Site consists of approximately 263 acres of land which is comprised of three distinct areas: the active former RTI complex (15 acres) the former Rockaway Industrial Park (RIP) (65 acres), and undeveloped land (183 acres) adjacent to those areas. Past activities at the Site have included the testing and development of rocket motors and propellants. More recent operations included irradiating food, cosmetics, and medical devices to sterilize them. Buildings in the RIP area have been vacant since 2006 and are in various stages of disrepair and/or disintegration. Only one business, Sterigenics International, occupies buildings on the former RTI portion of the Site.

Beginning in 1980, NJDEP and the Rockaway Township Health Department conducted numerous inspections of the Site. These inspections revealed that drums containing solvents and other organic chemicals were being improperly stored and disposed of by the owner and operator of Site, Radiation Technology, Inc.

In 1981, the Rockaway Township Health Department sampled two on-Site water supply wells. Results indicated that volatile organic compounds (VOCs) had contaminated the groundwater supplying these wells.

They subsequently were condemned by the New Jersey Department of Health and the NJDEP, and were closed. On July 6, 1983, NJDEP and RTI signed a judicial Consent Order, which required RTI to install ground water monitoring wells and collect samples for VOC analyses to determine the source of the contamination.

In August 1984, NJDEP issued a Site Evaluation Report with the objective of identifying sources of groundwater contamination at and around the RTI property. The results of the well sampling and analysis indicated that elevated levels of VOCs were present in the samples analyzed. Subsequently, the Site was placed on the National Priorities List (NPL) of Superfund sites in September 1984.

On March 12, 1987, RTI entered into an Administrative Order on Consent (AOC) with NJDEP and agreed to pay the cost of an investigation into the nature and extent of contamination at the Site. On December 12, 1992, RTI signed a second AOC with NJDEP, agreeing to perform some cleanup activities at the Site. In May 1993, under NJDEP supervision, RTI removed and disposed of abandoned tanks and drums off Site resulting from the above investigation. On May 9, 1994, NJDEP issued a ROD, selecting groundwater extraction and treatment as the remedy for the most-contaminated portion of the Site.

The following remedial action objectives (RAOs) were established for the groundwater at the Site:

- Prevent potential human exposure to contaminants in the deep aquifer groundwater which pose future carcinogenic risk to human health in excess of  $10^{-6}$  and/or which have a hazard index greater than 1. (Human health risk assessment is described on page \*\*\*)
- Control the spread of groundwater contamination.

These RAOs would be achieved by the following remedial action components:

- Treatment of the groundwater via extraction of the more highly contaminated groundwater and natural attenuation of residual groundwater contamination;
- Reinjection of the treated groundwater; and
- Appropriate environmental monitoring to ensure the effectiveness of the remedy.

In addition, NJDEP and EPA acknowledged the need for subsequent investigations of potential sources of groundwater contamination at the Site. This Proposed Plan focuses on those investigations.

## Remedial Investigation

In January 2001, EPA assumed the lead for the Site at NJDEP's request. In May 2004, EPA negotiated a Consent Decree with Alliant Techsystems, Inc. (ATK) (a successor to Thiokol, a former owner and operator of the Site), to undertake the groundwater cleanup. In September 2004 and April 2005, ATK conducted groundwater sampling as part of a preliminary design investigation to obtain a better understanding of the groundwater contamination conditions and to confirm the viability of the groundwater remedy selected in the 1994 ROD. The results indicated that further sampling would be necessary and ATK recommended that additional monitoring wells be installed.

In October 2004, ATK and EPA entered into an AOC to investigate potential sources of groundwater contamination at the Site. ATK conducted a preliminary assessment of a waste/drum disposal area located within the active former RTI complex. Samples were taken from deteriorated drums and adjacent soils. The results of the sampling indicated that elevated concentrations of metals (aluminum (495,000 milligrams per kilogram (mg/kg)), arsenic (72 mg/kg), cobalt (65 mg/kg), copper (18,500 mg/kg), iron (689,000 mg/kg), manganese (3,400 mg/kg), and thallium (53 mg/kg)) were found in deteriorated drum material.

Additionally, EPA identified asbestos-containing material covering piping along a fence in a portion of the Site. EPA removed the material in November 2006.

In early 2007, EPA was notified by the U.S. Army Military Munitions Response Program that a portion of the Site is within the boundaries of earlier projectile practice firing over Lake Denmark from the Picatinny Arsenal. As a result, the potential exists for the presence of unexploded ordnance. An initial inspection conducted in the summer of 2007 by the U.S. Army concluded that no immediate actions were necessary. However, ordnance-avoidance procedures were recommended for certain field activities at the Site. In May 2008, EPA and ATK received information from the U.S. Army on the types of materials that should be avoided.

In July 2008, EPA approved ATK's proposal to investigate potentially contaminated source areas on the Site. In September and November 2008, ATK collected 130 soil, surface water, sediment, waste pit, and tank samples to investigate potential source(s) of contamination to the groundwater. The results of the field activities indicate that the deteriorated drum material in a portion of the Site referred to as the waste/drum disposal area would need to be addressed.

### WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

## SCOPE AND ROLE OF THIS ACTION

In order to better manage Superfund sites, work is often divided into phases, or operable units (OUs). OU1 addresses groundwater at the Site. This action, referred to as OU2 which involves excavation of drum material with off-Site disposal and/or treatment, is not intended to be the final action for this Site. EPA is currently conducting other activities, such as building investigations, which will be the focus of a third OU.

This Proposed Plan summarizes the remedial alternative analyzed in the Focused Feasibility Study (FFS), and discusses the preferred alternative for addressing the on-Site waste/drum disposal area which could pose a threat to human health and the environment.

## SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment was conducted to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under

current and future land uses. The baseline risk assessment includes a human health risk assessment and an ecological risk assessment. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. The present land use within the Site is generally considered light industrial and commercial, although there are also significant portions of the Site that are undeveloped. It is anticipated that the future land use for this area will remain consistent with its current use.

A four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification of Chemicals of Potential Concern (COPCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated").

A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate the releases under current and future land uses. The following areas: South Stand, P-2, RTI, East Stand, and Drum Disposal (see Figure 1) were evaluated in the baseline risk assessment. While contaminants were found in the various areas, with the exception of the Drum Disposal Area, all of the areas investigated fell within EPA's acceptable risk range.

#### Human Health Risk Assessment

Risks and hazards were evaluated for current and future exposure to drum materials and soil from around the drum material. The potential populations evaluated for exposure included adult commercial workers and future residents. The hazard indices for the commercial worker scenario (3.1) and future resident scenario (42) from exposure to drum materials were above the acceptable value of 1.0. Additionally, the cancer risk for potential future residents was above the EPA acceptable risk range of  $10^{-6}$  to  $10^{-4}$ . The hazard index for exposure to surface soil for future potential residents was also above the acceptable value of 1.

#### What is Risk and How is it Calculated?

A Superfund human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substances released from a site in the absence of any actions to control or mitigate these releases; it estimates the "baseline risk" in the absence of any remedial actions at the site under current and future land uses. To estimate this baseline risk at a Superfund site, a four-step process utilized for assessing site-related human health risk for reasonable maximum exposure (RME) scenarios.

*Hazard Identification:* The hazard identification step identifies the contaminants of potential concern (COPC) in groundwater for this specific Site. Factors considered include: toxicity, frequency of occurrence, fate and transport of the contaminants in the environment; concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

*Exposure Assessment:* In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways for a groundwater site include ingestion of groundwater and inhalation of volatiles while showering. Factors relating to the exposure assessment include but are not limited to the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a RME scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

*Toxicity Assessment:* The toxicity step determines the types of adverse health effects associated with exposures to chemicals or radionuclides, and the relationship between the magnitude of exposure (dose) and severity of adverse effects (response). Potential health effects are chemical or radionuclide-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

*Risk Characterization:* This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk for developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a  $10^{-4}$  cancer risk means a "one in ten thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the exposure assessment. Current federal Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of  $10^{-4}$  to  $10^{-6}$  (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk). For non-cancer health effects, a "Hazard Index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding Reference Doses (RfDs). The key concept for a non-cancer Hazard Index is that a "threshold level" (measured as an HI of 1) exists below which non-cancer health effects are not expected to occur.

The following exposure pathway is considered to be of potential significance in the baseline risk assessment:

- Exposure to the drum material.

#### Summary of Hazards and Risks Associated with the Drum Disposal Area.

Receptor	Hazard Index	Cancer Risk
<i>Drum Material</i>		
Commercial Worker - Adult	3.1	5.0E-05
Resident - Adult/Child	42	2.1E-04
<i>Soil</i>		
Commercial Worker - Adult	<1	<1.0E-06
Resident - Adult/Child	1.3	6.0E-06
The COCs identified for the Drum Disposal Area include: aluminum, arsenic, cobalt, copper, iron, manganese, and thallium.		

#### Ecological Risk Assessment

A screening-level ecological risk assessment was conducted to evaluate the potential for ecological effects from exposure to surface soil, surface water and sediment. Surface soil, surface water, and sediment concentrations were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors. Exposure was also evaluated for terrestrial and aquatic wildlife species through the ingestion of prey and direct soil ingestion.

A complete summary of all exposure scenarios can be found in the screening level ecological risk assessment (SLERA). In summary, the results of the SLERA indicate that concentrations of contaminants detected in surface soil, surface water, and sediment at the Site are unlikely to pose any unacceptable risks to terrestrial or aquatic ecological receptors at the Site.

#### REMEDIAL ACTION OBJECTIVES

The following remedial action objective (RAO) has been established for the waste/drum disposal area of the Site:

- Reduce or eliminate direct contact risks associated with contaminated drum material and associated contaminated soil to levels protective for residential use:

To achieve this RAO, preliminary remediation goals (PRGs) were developed for the Site based on state

promulgated applicable or relevant and appropriate requirements (ARARs).

The following clean-up goals are based on NJDEP's residential soil remediation standards.

Contaminant	PRGs (mg/kg)
Aluminum	77,344
Cobalt	25
Copper	3,083
Iron	82,600
Manganese	3,640
Thallium	5
Arsenic	19

#### DESCRIPTION OF ALTERNATIVES

Do to the limited extent of the contaminated area, EPA considered a containment remedy during the FFS planning phase, but determined it was not appropriate under the circumstances and eliminated it from further consideration.

##### Alternative 1: No action

Estimated Capital Cost: \$0  
 Estimated Annual O&M Cost: \$0  
 Estimated Present Worth Cost: \$0  
 Estimated Construction Time frame: None

Regulations governing the Superfund program require that a "no action" alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action at the Site to prevent exposure to contaminated drum material. Since this alternative would result in contaminants remaining on the Site above levels that would not allow for unlimited use, a review of the Site at least every five years would be required.

##### Alternative 2: Excavation of Drum Material, with Off-Site Disposal and/or Treatment

Estimated Capital Cost: \$196,000  
 Estimated Annual O & M Cost: \$4,000  
 Estimated Present Worth Cost: \$200,000  
 Estimated Construction Time frame: 1 month  
 Estimated Time to Achieve RAOs: 1 month

Under this alternative, approximately 100 cubic yards of contaminated drum material in the waste/drum disposal area would be excavated and transported off-Site for treatment and/or disposal. Following excavation of the drum material, soils adjacent to the excavated drum

material will be sampled to determine if they are above the PRGs. If the sampling results indicate that the soils are the above PRGs, they will be excavated and treated and/or disposed of off Site. In addition, any debris that is comingled with the contaminated drum material will be removed, treated and/or disposed of off Site. Following source remediation, areas disturbed by excavation activities will be re-vegetated and restored to pre-excavation conditions.

## EVALUATING REMEDIAL ALTERNATIVES

Nine criteria are used to evaluate remediation alternatives individually and against each other in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of the alternatives against the nine criteria. The nine evaluation criteria are discussed below.

## COMPARATIVE ANALYSIS

### 1. Overall Protectiveness of Human Health and the Environment

Alternative 1, "no action," will not provide adequate protection of human health and the environment. Alternative 2 (excavation of drum material with off-Site disposal and/or treatment) will remove the contaminated material in the drum disposal area. Therefore, Alternative 2 is considered to be protective of human health and the environment.

Because the "no action" alternative is not protective of human health and the environment, it was eliminated from consideration under the remaining eight criteria.

### 2. Compliance with the ARARs

Actions taken at any Superfund site must meet all ARARs for federal and state law or provide grounds for invoking a waiver of these requirements. These include chemical-specific, location-specific, and action-specific ARARs. Alternative 2 would attain site-specific, risk-based soil PRGs and would meet all chemical, location- and action-specific ARARs.

### 3. Long-term Effectiveness and Permanence

Alternative 2 would be permanent and effective since it removes the contaminated drum material from the Site.

## EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

*Overall Protectiveness of Human Health and the Environment* determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

*Compliance with ARARs* evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

*Long-term Effectiveness and Permanence* considers the ability of an alternative to maintain protection of human health and the environment over time.

*Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment* evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

*Short-term Effectiveness* considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

*Implementability* considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

*Cost* includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

*State/Support Agency Acceptance* considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

*Community Acceptance* considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

### 4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Alternative 2 would reduce mobility of the contaminants in the drum material through excavation of contaminated drum material and disposal at an off-Site facility, and would reduce toxicity if treated off Site.

### 5. Short-Term Effectiveness

Alternative 2 would present short-term risk because of the potential for exposure to contaminated drum material during excavation and off-Site transportation. Air monitoring, engineering controls and the appropriate use of personal protective equipment for workers would be effective means to protect the community and workers.

## 6. Implementability

Alternative 2 may require excavation support and dewatering systems during the contaminated drum material excavation activities. Equipment and vendors for implementation of Alternative 2 are readily available and are, therefore, not expected to present a challenge to remedy implementation.

## 7. Cost

The estimated present worth cost of Alternatives 2 is \$200,000.

## 8. State/Support Agency Acceptance

The State of New Jersey is currently evaluating EPA's Preferred Alternative in this Proposed Plan.

## 9. Community Acceptance

EPA will evaluate community acceptance of the Preferred Alternative after the public comment period ends. EPA will discuss community acceptance in the ROD, the document that formalizes the selection of the remedy for the Site.

## SUMMARY OF THE PREFERRED ALTERNATIVE

The proposed remedy for the cleanup of contaminated drum material at the Site is Alternative 2, (excavation of contaminated drum material with off-Site disposal and/or treatment).

EPA anticipates that all of the contaminated drum material exceeding PRGs will be removed from the drum disposal area. Following excavation of the drum material, soils adjacent to the excavated drum material will be sampled to determine if they are above the PRGs. If the sampling results indicated that the soils are the above PRGs, they will be excavated and disposed and/or treated off-Site. In addition, any debris that is comingled with contaminated drum material will be removed, disposed and/or treated off-Site.

EPA believes the Preferred Alternative will be protective of human health and the environment, will comply with ARARs, will be cost effective, and will utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. The Preferred Alternative meets the statutory preference for the use of remedies that employ treatment that

reduces toxicity, mobility or volume as a principal element to address the principal threats at the Site. The Preferred Alternative can change in response to public comment or new information.

Consistent with EPA Region 2's *Clean and Green* policy, EPA will evaluate the use of sustainable technologies and practices with respect to any remedial alternative selected and implemented for the Site.

## COMMUNITY PARTICIPATION

EPA provides information regarding the cleanup of the RTI Site to the public through public meetings, the Administrative Record file for the site, and announcements published in the Daily Record. EPA and the State encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there. The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan.

EPA Region 2 has designated a Regional Public Liaison Manager as a point-of-contact for community concerns and questions about the federal Superfund program in New York, New Jersey, Puerto Rico and the U.S. Virgin Islands. To support this effort, the Agency has established a 24-hour, toll-free number that the public can call to request information, express their concerns or register complaints about Superfund.

For Further Information on the RTI Site, please contact:	
Brian Quinn Remedial Project Manager 212-637-4381 quinn.brian@epa.gov	Patricia Seppi Community Involvement Coordinator 212-637-3679 seppi.patrica@epa.gov
U.S. EPA 290 Broadway, 19th Floor. New York, New York 10007-1866	
The Regional Public Liaison Manager for EPA's Region 2 office is:  George H. Zachos Toll-free (888) 283-7626 (732) 321-6621	
U.S. EPA Region 2 2890 Woodbridge Avenue, MS-211 Edison, New Jersey 08837	